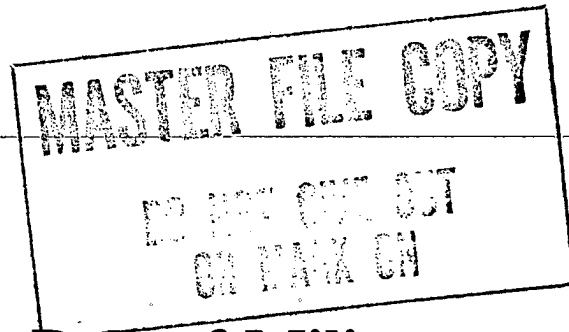




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# The Role of Military Representatives in Soviet Armaments Acquisition

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A Research Paper

DIA review Completed.

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# The Role of Military Representatives in Soviet Armaments Acquisition

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A Research Paper

This paper was prepared by [ ] Office of  
Soviet Analysis, and reflects contributions by [ ]

[ ] SOVA [ ]

Comments and queries are welcome and may be  
addressed to the Chief, Defense Industries Division,  
SOVA, [ ]

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### The Role of Military Representatives in Soviet Armaments Acquisition

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#### Key Judgments

*Information available  
as of 1 February 1984  
was used in this report.*

The military representative system monitors all aspects of the research, design, and production of Soviet arms and equipment. We estimate that the USSR stations some 30,000 military officers and civilian technicians at more than 3,000 plants and institutes—virtually every location where military items are designed, developed, produced, or delivered.

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Through the military representative system, a vast amount of industrial data flows between the Ministry of Defense and Soviet defense industry. This information on production capabilities gives the Defense Ministry a clear advantage over nondefense ministries in the competition for scarce resources. The system also allows the military to avoid some of the bottlenecks that plague civilian production. Bridging the gap between customer and producer, military representatives create a responsiveness in industry that is often lacking in the nonmilitary sector.

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The key functions of military representatives are:

- Oversight of military research and development at institutes and facilities of the Academy of Sciences, the Ministry of Higher and Secondary Special Education, and industrial facilities to ensure compliance with military requirements and state design standards.
- Quality control and acceptance of armaments and equipment at production plants.
- Review of the plant's mobilization plans and inspection of its stockpiled reserves.
- Supervision of the testing of military equipment to ensure compliance with prescribed test procedures.
- Liaison between the military and the defense industry facility, keeping the Defense Ministry informed about progress and problems.

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Despite the pervasiveness of the system, serious quality control problems still remain. military representatives are not as vigilant as they could be in regulating the costs of military production. In addition, reports of graft and bribery in the system are commonplace, although the degree to which this affects the performance of the system is not clear. Despite the problems, however, the military representative system effectively ensures reliable performance and timely delivery in the critical area of defense production.

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## The Role of Military Representatives in Soviet Armaments Acquisition

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### Introduction

Czar Peter the Great introduced the institution of the "military representative" in the early 1700s, when he assigned army and navy officers to plants producing military equipment. In 1862 the Imperial Government established a "military acceptance" organ as part of the newly created Main Artillery Directorate (GAU). This organ, staffed by officer engineers, artillery examiners, and service inspectors, operated as a procurement agency for the Russian, and later Soviet, army until 1954.<sup>1</sup> Over time, the development of new technologies led to the formation of additional directorates to manage defense procurement for the changing needs of the armed forces.<sup>2</sup>

The *Soviet Military Encyclopedia* defines a military representative (*voyennyy predstavitel'*) as

*An officer or civilian employee of the armed forces who is permanently stationed at an industrial enterprise that fills military orders, and who is authorized to monitor the quality of the goods being produced. Military representatives of the USSR Ministry of Defense monitor the observation of the technical process of manufacturing weaponry, combat equipment, and other military products, as well as the calculation of their cost. They accept the finished product after it has undergone the appropriate tests of its quality and reliability, and they check for the elimination of defects discovered in the process of inspection and operation.*

<sup>1</sup> Soviet Military Encyclopedia, Vol. II, pp. 271-72.

The fundamental role of military representatives in the USSR has remained unchanged, even though the responsibility for managing the procurement of weapon systems has shifted within the Ministry of Defense during the past 25 years. During most of the 1960s, a technical directorate in each branch of service was responsible for procuring weapons and equipment, with overall control centralized under a deputy chief of the General Staff. Outside the individual services, specialized main directorates of the Ministry of Defense were responsible for the procurement of products or equipment that are used by more than one service.

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The most recent reorganization of the Defense Ministry led to the appointment in 1970 of Gen. Nikolay Alekseyev to the re-created position of Deputy Minister of Defense for Armaments. We believe that oversight of weapons acquisition and the system of military representatives was centralized under Alekseyev and, since at least late 1980, his successor Army General Vitaliy Shabanov. (Appendix A provides a more detailed discussion of the organization for weapons acquisition in the Soviet Union.)

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### Military Representatives: Numbers and Organization

Military representatives monitor all industrial activities contributing to the military. We estimate that the USSR currently employs some 30,000 military representatives and civilian technicians in more than 3,000 research and development and production facilities. (Appendix B describes the methodology used for this estimate.) By comparison, the US Defense Department has 17,000 military and civilian personnel performing similar functions in 1,100 civilian plants and

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institutes. Furthermore, [ ] the Soviets station military representatives in plants abroad (especially in non-Soviet Warsaw Pact countries) that supply equipment to the Soviet military. We do not know how many foreign-based Soviet military representatives there are and make no attempt here to include them in our estimates. [ ]

Most military representatives are engineer officers who, after advanced technical training at a five-year military engineering academy, are assigned to a main armaments directorate under the overall supervision of the Deputy Minister of Defense for Armaments.<sup>3</sup> Many of these officers receive advanced technical training as well, either before being assigned to a military representative team or during an assignment.

[ ] only officers receiving top grades are considered for military representative posts and that competition is intense because these are generally considered to be highly desirable assignments. The demand for highly skilled engineer officers to serve as military representatives at research institutes and design bureaus is particularly acute. The requirements for civilian staff members are less stringent, and preference is usually given to graduates of a civilian institute or technical school. [ ]

The point in an officer's career at which he is assigned to a military representative post can vary. Some may be assigned directly upon commissioning, others after duty as maintenance engineers in line units. It is also common for retired military representatives to become senior officials in a civilian ministry. [ ]

[ ] officers can spend most or even all of their careers in military representative slots. If a transfer is necessary, the officer is usually shifted to a military representative slot at another plant. We know of three assignments that lasted 20 years and one that lasted 10 years. [ ]

<sup>3</sup> Each main armaments directorate works closely with its associated military academy to ensure that the academy's research is so directed as to satisfy the directorate's requirements. Military representatives, as part of their academy training, are assigned to design and production facilities under main directorate auspices.

In the late 1960s an official policy change required military representatives to dress in civilian clothes while on the job and to be referred to not as military representatives (*voyennyye predstaviteli*) but as customer representatives (*predstaviteli zakazshchika*). [ ] this change was part of an effort to reduce the visibility of the military at industrial facilities. [ ]

#### Organization of the Military Representative System Overall Supervision. [ ]

the Defense Ministry order establishing a military representative group (MRG)<sup>4</sup> directs it to work under the supervision of a main armaments directorate. The main directorate delegates control to either its production or its R&D "branch" (figure 1). The production branch is responsible for the acceptance of and payment for military equipment. The R&D branch is responsible for monitoring military research and development and controls the military representatives assigned to civilian research institutes and design bureaus.<sup>5</sup> [ ]

**Regional Engineer Office.** Each main armaments directorate of the Ministry of Defense maintains a network of regional engineer offices. [ ]

[ ] each office is an administrative entity that keeps records on the main directorate's representatives stationed in its region and on the projects these representatives are monitoring for the directorate. The regional engineer—who must hold the rank of major general (one star) or colonel—typically has his office at a large enterprise in his geographic region. [ ]

A regional engineer office is administratively responsible for the military representative groups located in its region. It groups all MRGs subordinate to a single

<sup>4</sup> The name of such a group in Russian is *voyennoye predstavitel'stvo* (abbreviated *voyenpredstvo*). It may be variously translated as a military representative group, unit, or team. [ ]

<sup>5</sup> On the civilian side, general defense production guidance comes down from the Council of Ministers, through the Military Industrial Commission (VPK), to the main directorate of the individual ministry and, in turn, to the individual plant concerned. Plants and factories producing military equipment are subordinate to main directorates within the industrial ministry. [ ]

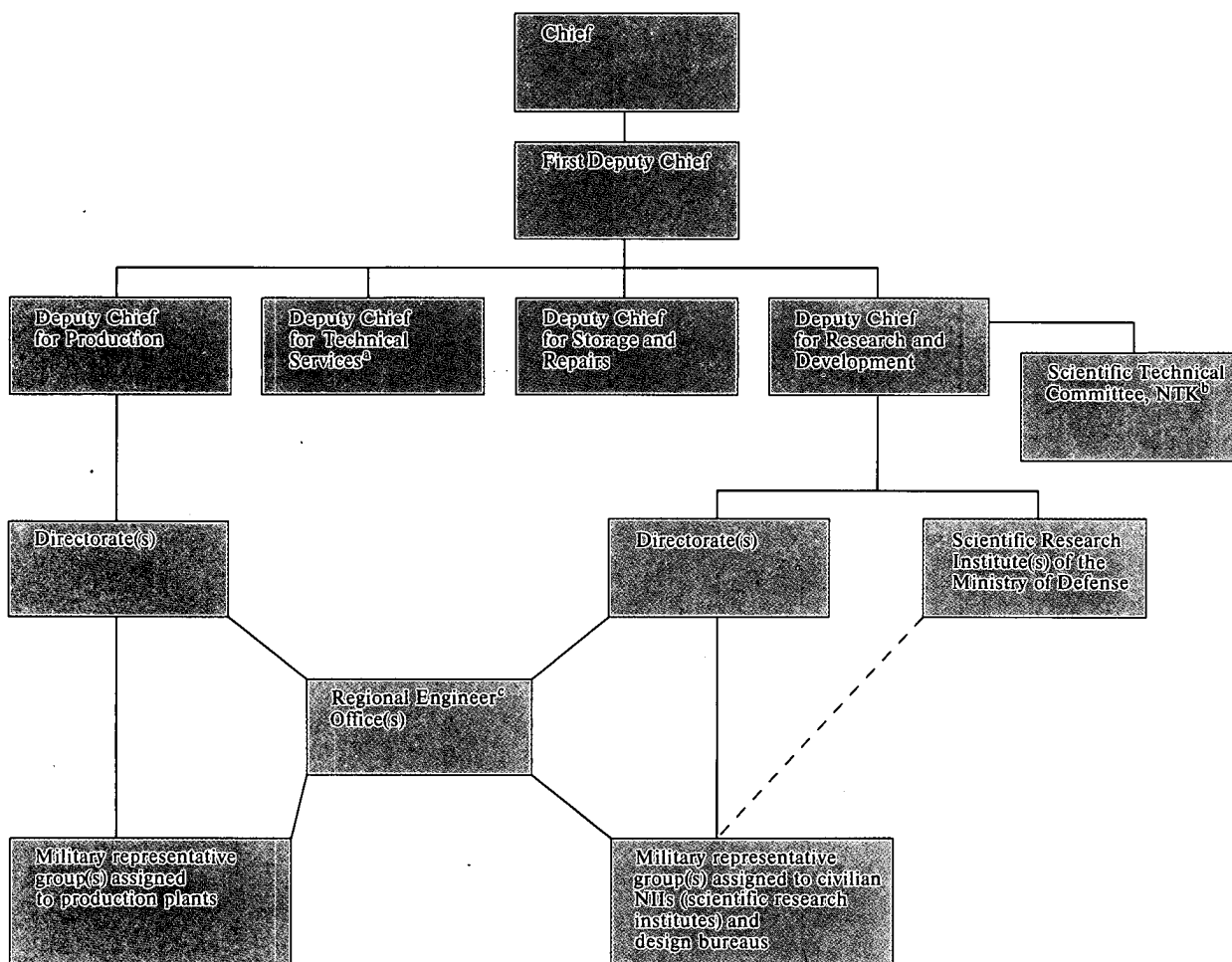
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**Figure 1**  
**Organization of a Typical Main Armaments Directorate**  
**of the USSR Ministry of Defense**



<sup>a</sup> Technical services include a printing shop, a reference library, and a technical library for all technical documentation.

<sup>b</sup> The NTK (nauchno-tekhnicheskii komitet), chaired by the deputy chief for R&D of the main directorate, is an advisory body composed of technical experts of the main directorate's R&D component.

<sup>c</sup> An MRG is subordinate to the Regional Engineer for administrative matters but reports directly to the directorate on all technical questions.

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main armaments directorate into an organizational entity known as a cluster. The geographical area of responsibility for one regional engineer office may overlap the areas of regional engineers representing other main directorates. If several MRGs, subordinate to different main directorates, are stationed at the same plant, each is under the administrative control of the regional engineer of its own main directorate. [redacted]

[redacted] the regional engineer is responsible for inspecting the MRGs under his jurisdiction. Since about 1967, inspections have been made every two years at the Riga plant. This system of inspections was instituted by an order issued by the Main Directorate for Rocket Armament and Equipment (GURVO). It is carried out (at least within GURVO) by the regional engineer office, which appoints members for the inspecting team from various other MRGs under its jurisdiction. As a rule, one member of the team is from the parent main directorate in Moscow. [redacted]

[redacted] MRG personnel never receive reprimands directly from the inspecting team. Instead, the main directorate uses a system of monthly information messages to address MRG problems in the field. These messages normally contain lists of all MRG personnel nationwide who are found guilty or are dismissed for discipline violations, heavy drinking, immoral conduct, or scandals. [redacted]

#### The Military Representative Group

An MRG is planned jointly by the Ministry of Defense and the appropriate industrial ministry. It is established by a Defense Ministry order (*prikaz 1*), which specifies the identification number of the MRG, the plant to which it is assigned, its chief, its table of organization, and various financial and budgetary data and obligations. [redacted]

[redacted] guidelines for the operation of an MRG are contained in a series of regulations promulgated by the parent main directorate. The general regulation on military representative units (*obshcheye polozheniye o voyennykh predstavitel'stvakh*) is a general statement on the missions and functions of MRGs. It stipulates that the host plant shall provide the facilities necessary for the team's

operation, such as floorspace, housing, telephones, and testing equipment. More specific regulations are mutual agreements between a specific MRG and the host plant. These provide a detailed description of the team's inspection responsibilities and procedures, including the timing of inspections, the types of products to be checked and, in general, how such checks are to be performed. The regulation also specifies whether the MRG is to check export products. [redacted]

Figure 2 shows the organization of an MRG. Control runs through the regional engineer up to the deputy chief for production or R&D of a main armaments directorate. To handle problems of a technical nature, the MRG bypasses the regional engineer and reports directly to the appropriate element at the main directorate. [redacted]

**Size.** The decision to establish an MRG and its subsequent size depend on the volume and complexity of the military production to be monitored. A large enterprise like the Kiev Arsenal Plant could have as many as 200 military representatives organized into three or four MRGs, each accepting products for its parent main directorate. If a plant manufactures only a few military items, production may be spot checked by a single military representative based at a nearby plant. [redacted]

[redacted] there are three categories of MRGs based on the size of the individual group.

- Category three is the smallest; such a group consists of up to five people and is normally commanded by a major.
- A category two group contains from six to 25 individuals, with a lieutenant colonel as the senior officer.
- A category one group has more than 25 people and is commanded by a colonel.

Because the rank structure in these units is inflexible, the MRG chief makes every effort to upgrade his unit to a higher category (this is the only way he can get promoted). One way of doing this is to constantly ask for more manpower. [redacted] the MRG

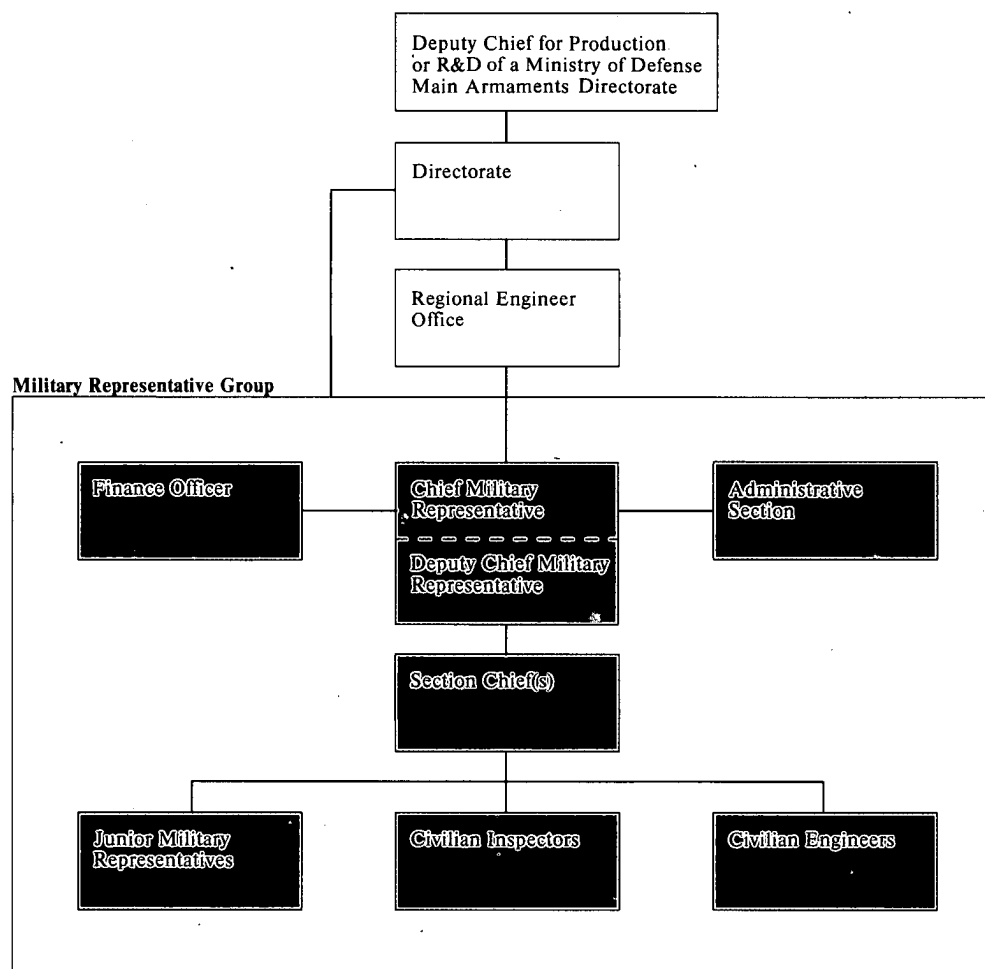
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**Figure 2**  
**Organization of a Military Representative Group**



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chief was constantly afraid that his group would be cut in size and therefore ordered unnecessary work to be performed in an attempt to appear busy. He added that the chief was always interested in supervising more military projects and thus often pressured plant officials into accepting military orders. While plant officials usually strive to maintain good relations with the MRG, [ ]

[ ] plant managers often resist taking on military projects in order to avoid the associated hassles and the endless documentation requirements. [ ]

**Composition.** Military representative groups normally have both military officers and civilian personnel. The complexity and importance of the research or production generally determines the mix. MRGs at research institutes and design bureaus are composed mostly of officers. Routine quality control of ongoing production lines is normally handled by a team composed mostly of civilian technicians who are direct employees of the Ministry of Defense. Civilians are generally preferred for the more routine tasks because their average wage rate is only half that of a military inspector in the same position. Civilian employees are hired (and fired) by the senior military representative at the plant (subject to the approval of the regional engineer office) and receive their pay from the Defense Ministry. [ ]

A typical MRG has a senior military representative (*starshiy voyenpred-rukovoditel'*), usually a colonel or a lieutenant colonel; a deputy chief with the rank of lieutenant colonel or major; at least one section chief (*voyenpred-rukovoditel'*), usually a major; and various military and civilian inspectors. The duties of the chief and deputy chief are primarily administrative in nature. [ ]

[ ] the senior representative has authority over the hiring and firing of civilian personnel, civilian salaries, and the leave requests and temporary duty assignments of all personnel. He does not, however, have the power to set and distribute the group members' annual premiums—this matter is decided at the main directorate level in Moscow. The MRG chief meets regularly with plant engineers and shop chiefs. He is also a member of the interdepartmental commission (*mezhdudedomstvennaya komissiya—MVK*), which meets at the plant to validate test

results on an experimental product before it is approved for series production. [ ]

Within an MRG, the section chiefs have primarily technical responsibilities. They are assigned to monitor specific product lines with the assistance of junior military representatives (*mladshiy voyenpred*) and/or civilian engineers. [ ]

**Reporting.** The MRG prepares quarterly reports for the parent main directorate on all technical aspects of its operation. This report lists quality control procedures completed, number of units inspected, costing data, number of rejections, number of approvals on resubmission, and so forth. A similar, but less formal, report is sent to the regional engineer office. The MRG also furnishes reports on design bureau work, the status of the plant's mobilization efforts, and the competence and political activities of group personnel. When appropriate, it reports to the Foreign Trade Inspection Office of the Ministry of Foreign Trade on export items,<sup>6</sup> including information on the production cost of items inspected, number of items, and the places and dates of shipping. [ ]

<sup>6</sup> MRGs presumably report to anyone for whom they act as proxy customers. This includes the State Committee on Foreign Economic Relations (GKES) and the Ministries of Communications, Civil Aviation, Geology, and so forth. [ ]

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### Functions of Military Representatives

Military representatives are involved throughout the acquisition process, from oversight of basic research at institutes of the Academy of Sciences to acceptance of finished items at the production plant. They inform their superiors at the main directorate level of any problems at the institute or plant and, at the same time, they keep plant officials abreast of the latest military requirements. Table 1 illustrates their key functions.

### At R&D Facilities

the major tasks of military representatives at civilian scientific research institutes (NIIs) include:

- Charting progress of scientific research being conducted on behalf of the Soviet military.
- Approving testing results that ensure prototype models conform to standards. Testing reports are approved by the senior military representative and by the researcher who was responsible for developing the item in question.
- Monitoring and controlling costs of military projects. Throughout the course of development of a component or system, the military representative has to approve any change in cost or in the scheduled time of completion for a project.<sup>7</sup>

The major task of military representatives at design bureaus is to monitor experimental work, including the design of prototypes, and all other pre-series-production activities.

Military representatives do not, however, get involved in the actual design of equipment.

military representatives would occasionally suggest changes in a project to reduce costs. For example, they might allow less accurate equipment to be used as long as technical requirements were met. Their overriding interest, was the development of a good end product that met the standard as outlined in the technical assignment (TZ).

**Table 1**  
**Key Monitoring Functions of Military Representative Groups**

MRGs at:	Monitor:
Production plants of the defense industrial ministries	Series production of arms and equipment; accept these items for the military
	Plant mobilization planning and reserves
Production plants of the nondefense industrial ministries	Military production projects
R&D facilities of the defense industrial ministries	Military R&D projects, to ensure compliance with military requirements and state standards as defined in the Unified System of Design Documentation (YeSKD)
R&D facilities of the nondefense industrial ministries	Military R&D projects
Technical institutes of the Ministry of Higher and Secondary Special Education	R&D activities
Institutes of the Academy of Sciences	Military-related research projects
Test ranges	Testing of military equipment for compliance with prescribed procedures

Note: An MRG provides liaison between its parent main armaments directorate and the institute or plant where it is stationed.

**Design Documentation.** Military representatives monitor all technical documentation for defense production prepared at Soviet design facilities. They ensure that the proper forms are filled out in strict accordance with the standards given in the Unified System of Design Documentation (YeSKD).<sup>8</sup> Table 2 outlines

<sup>8</sup> YeSKD was introduced in the early 1970s to provide standardized procedures throughout industry for identifying product development stages and milestones.

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**Table 2**  
**Stages for a Typical Soviet R&D Project**

Stages	Activities Involved
Tactical Technical Requirement (TTT)	Generation by the military of weapon system requirements or operational need for specific class of weapon.
Technical Assignment (TZ)	Development requirements defined by the military in terms of general performance and physical characteristics.
Technical Proposal (TP)	Design alternatives proposed by the integrating contractor in the responsible industry. MRG becomes actively involved at this stage.
Draft Design (EP)	Preliminary design solutions reached (technology frozen). Sub-scale mockups made.
Technical Design	Final design approved and full-scale mockup made. Review and approval of project status by technical authority.
Pilot Model	Working drawings. Initial prototype fabrication. Ground tests of components, subsystems, and integrated systems.
Pilot Lot	Prototype manufacture at the experimental fabrication plant and the assigned production facility. Prototype testing. Review and approval of project accomplishment by technical authority.
Trial Production	Assimilation of design by production facility. Production of accepted design under series production conditions.
Series Production	Production for operational deployment.

chaired by an officer of the appropriate main armaments directorate and is composed of representatives of the industrial ministry, the leading design bureau, the appropriate research institute, and the MRG (usually the senior military representative). The MVK can also be convened on an ad hoc basis to solve important problems or to terminate an experimental project.

An MVK must approve the pilot model (prototype) test results, allowing the design project to move from the pilot model to the pilot lot phase (the last stage before trial production). The MVK is also responsible for resolving any problems which appear in the course of trial production. The military representative, on behalf of the "customer," is responsible for bringing any such problems to the attention of the MVK for resolution. The commission certifies its decision in a formal, numbered decree, signed by the plant's deputy director for production.

#### At Series Production Plants

**Quality Control.** Military representatives inspect every aspect of the production process, from the incoming materials as they arrive at the plant, through component manufacture, to final system assembly. They also inspect instrumentation and plant machinery. These inspections and acceptance testing procedures are conducted according to specifically prepared documentation agreed upon by the Ministry of Defense and the plant's parent industrial ministry during the negotiations in which the military representative team is originally created.<sup>9</sup> Every step of serial production is recorded in a log (maintained by plant personnel and countersigned by the military representative), and any change from the approved directives is entered into the project documentation.

the documentation flow for a typical project. Military representatives get involved at the technical proposal stage, and they remain active throughout the acquisition process. This process can take anywhere from six years for a minor system modification to 15 years for a typical major new weapon system.

**Interdepartmental Commissions.** An interdepartmental commission (MVK) is generally formed to oversee the testing of a specific subsystem or prototype. It is

All production for the military is reviewed first by plant inspectors and approved by the plant's technical control department (OTK). Military representatives, in most cases, perform separate quality control inspections and performance testing. Their first inspection

<sup>9</sup> Any specialized procedures needed for a particular project are specified in the contract that is drawn up for every military production project.

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### Examples of Test Procedures for Military Products

[redacted] at the **Svetlana Plant in Leningrad**, the initial quality check of integrated circuits (ICs) destined for military use involved inspecting 20 parts from a given production run or lot. If these were satisfactory, the whole lot was accepted. If any were unsatisfactory, then 60 parts were checked. [redacted] under-the-table deals were made when an unusually high number of parts failed military quality control standards. As a result, [redacted] the military never rejected an entire lot. Quality control at the Svetlana Plant involved subjecting the ICs to prolonged wear, vibration, and shock testing. [redacted]

At the **Odessa Resistor Plant**, quality control inspections were identical for military resistors and those destined for civilian applications, [redacted]

The only difference in the treatment of civilian and military items was the number of resistors subject to inspection. Civilian production runs, [redacted] underwent spot checking that usually amounted to 10 percent of the total run. Military production runs, however, were subject to 100-percent inspection. All testing at the Odessa plant was carried out by civilian technicians, and military representatives acted only as observers. [redacted]

[redacted] the **Scientific Research Institute of Normalization and Standardization of Electronic Equipment**—an organization subordinate to the Ministry of the Electronics Industry (MEP)—[redacted] a standard procedure within MEP called for the military representative to test five randomly selected finished electronic components out of every 100 manufactured by a factory. All five had to pass the inspection in order for that specific production run to be approved for military use. If even one failed, the entire run was either destroyed or designated for civilian use. [redacted]

[redacted] the **Riga Electric Machine Building Plant (REZ)** [redacted]

[redacted] (REZ manufactures power supply systems and magnetic starters for the Strategic Rocket Forces.) Finished products destined for the military or for export underwent a quality control inspection by the plant's quality control department (OTK)

and by the MRG. The signatures of both the OTK member and the military representative were needed on the documentation accompanying each item. If an item was defective, the military representative drew a red line through the acceptance form, signifying that the product required corrections at the shop responsible for the mistake. [redacted]

Once an item was redlined, the shop responsible was denied bonuses for that item. [redacted] this was very serious, and plant personnel and military inspectors sought to avoid redlining in order to maintain good relations. From 1971 to 1977, redlining occurred only two or three times at the REZ plant. (In practice, since the plant OTK members inspected the product first, any deficiencies were corrected before the items were submitted to the MRG.) [redacted]

The **Kiev Construction and Roadbuilding Plant**, [redacted] had a four-part procedure for quality control of military products. Upon producing the first item of any lot of parts, a worker checks it for conformity with design standards. Then it is checked by the foreman and, if it is satisfactory, is returned to the worker for production of the entire lot. Subsequently, a random check of the completed lot of parts is performed by the OTK and the military representative. If approved by the MRG, the lot is accepted for use in production. [redacted]

At the **Lyov Electronic Instrument Plant**, [redacted] OTK inspectors put each tube through a prescribed series of tests. The plant testers (primarily interested in meeting the production plan) sometimes left a tube on the stand for 20 to 25 minutes instead of the prescribed one-half hour. The military representative, on the other hand, tested only a portion of a batch (maybe five out of 15 tubes) but adhered scrupulously to the test standards. If one tube failed, the entire batch was returned to the plant tester, who would have to retest all of them. When a plant inspector confirmed that a tube was not up to standards, it would be replaced with a new one and the whole batch would be resubmitted to the military representative and the procedure repeated. [redacted]

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of a piece of military equipment is usually performed on a sample batch (emigres have mentioned samples of anywhere from 5 percent to 20 percent of a gross lot). If a defect is found, the sample batch is returned to the plant testers for retesting. Defective units are repaired or replaced, and the whole batch is returned to the military representative and the procedure repeated.<sup>10</sup> (For major end-items such as missiles, tanks, and aircraft, each item—not merely a sample—is fully tested before military acceptance.) Rejected items, if they meet civilian specifications, can be used in civilian products where tolerances are less critical.

[redacted] military representatives are also required to inspect incoming materials and components made at other plants, if these are intended for integration into military production—even if they had been examined and approved by the military representatives stationed at the sending plant. For example, at the Kiev Cable Plant (a subcontractor to plants making missile components for the Strategic Rocket Forces), military representatives inspect the cable before it is delivered to the Kiev Radio Plant (a maker of electronics components for tactical and strategic surface-to-surface missiles). When the cable arrives at the Radio Plant, complete with MRG seals affixed, it is reinspected by military representatives who must formally accept it for use at their plant. It is true that only samples from gross lots of the incoming material are inspected, but this double inspection reflects a redundancy of military control over the quality of military armaments.

Overseeing the production process is another aspect of the MRG's duty in series production facilities. Any change in established procedure—even a change in the machinery producing the military product—requires authorization from the main directorate (given through the plant MRG). Moreover, if the manufacturing process deviates from the technical specifications, or if any problem arises, the MRG has the authority to halt all production temporarily and demand that the situation be corrected. While all

<sup>10</sup> Reinspection of an item, even if the results are successful, automatically results in a decrease in the factor used to determine the monthly bonus payment. (The bonus, [redacted] can amount to 30 percent of a worker's base pay.) If the number of reinspected items is large relative to the total output, the decrease can result in a significant loss of earnings for plant workers.

available evidence indicates that production is rarely halted, the authority to do so can be a powerful tool in the hands of a military representative.

**Defects and Complaints.** The main duty of military representatives at series production plants is to ensure that production moves along on schedule unless it is slowed by quality control problems or a shortage of components or materials. In sharp contrast to a civilian plant manager, a military representative often considers it more important to meet qualitative specifications than to meet a schedule.

[redacted] military representatives are responsible for monitoring "unsatisfactory reports" on newly deployed equipment that the producing plant may receive from an operational/field unit. The first step in solving the problem is to analyze the field report and send guidance back to the field unit. If a solution cannot be found through analysis of the report, a military representative is sent to the field to investigate the problem.

[redacted] formal complaints about faulty military production are few—because most problems are solved informally at the plant prior to MRG acceptance. The MRG gives the plant every opportunity to correct a problem, but if it persists, the senior military representative has the right to renegotiate the production contract or (with the concurrence of the main directorate) to cancel the contract for nonperformance.

[redacted] in general, the military accepted only 5 to 8 percent of the integrated circuits produced at the Svetlana Plant in Leningrad and that this was primarily because the plant had to work with poor-quality materials. [redacted] the Svetlana Plant made circuits for military and civilian customers on the same production line, with the better products going to the military. [redacted] up to 99 percent of the transistors manufactured at the Minsk Electronics Plant were unfit for military use.

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[redacted] production there normally involved a great deal of waste, even the production of equipment for military use. Despite inspection at the originating plant, a substantial number of the incoming components were faulty. Largely because of these necessary repetitions, [redacted] the inspection process as a whole consumes an extremely high percentage of the total manpower required to produce a given item. [redacted]

**Contracts and Costing.** Military representatives are responsible for controlling the cost of products and negotiating prices. Equipment is purchased by means of a direct contract between the main directorate and the supplying enterprise. Engineer-economists, assigned to the main directorate, assist the MRG in estimating the total cost of a military run. The run is expected to stay within this amount; and even when it does, the MRG is obligated to work with plant personnel to seek ways of cutting production costs still further—through acceptable changes in the manufactured item or the manufacturing process or through improved labor productivity. [redacted]

The price of a military item is estimated by the managers of the producing plant and approved by the senior military representative. [redacted]

[redacted] in many cases, the two sides agree without difficulty and the price is sufficient to enable the plant to operate profitably. If the plant and the MRG cannot agree on a price, an engineer-economist from the Defense Ministry main directorate reviews factors affecting the cost of production. If the plant is not satisfied with the final price, it has the right to appeal the matter to an arbitration court. [redacted]

Follow-on contracts are negotiated annually to capture the lower costs that occur as the plant works out its production problems over time (the so-called learning curve). [redacted]

[redacted] labor costs were automatically reduced by 5 to 15 percent during the second year of production of an item. [redacted]

A new contract is also needed when an item is redesigned, whether to correct a flaw or to give it additional capabilities. In this case the price would normally rise for the first few production runs. [redacted]

The MRG is obligated, [redacted] to see that the plant carries out all of the provisions of the contract and supporting documentation and to reject any effort to deviate from these provisions. However, both the plant and the MRG are encouraged to improve on the specifications, if experience indicates this is possible. If the plant recommends a change, however, it must be accompanied by complete written justification (with appropriate drawings), which must be approved by the Ministry of Defense main directorate (and signed by the senior military representative) before it can be implemented. [redacted]

[redacted] Soviet plant managers often inflate their opening price proposals during contract negotiations in anticipation of MRG efforts to cut the final price. Assuming that the military would eventually cut the proposed price by 25 percent, the plant director automatically raised his price estimate by 30 percent to provide a 5-percentage-point bargaining cushion. The plant senior military representative does not sign the price proposal document until his superior (from the regional engineer office or from the main directorate in Moscow) has checked the figures. The signed document is sent to the appropriate main directorate in the industrial ministry and then to the State Committee for Prices. Approximately six months later, the plant receives an approval notice and the price becomes official. It remains fixed for the entire year. [redacted]

**Delivery Schedules.** Military representatives monitor the production process not only to ensure its efficiency but also to see that quotas are met on schedule. Both the amount of production and the delivery schedule are part of the contractual agreement between the Ministry of Defense and the industrial ministry. The universal desire to meet the quotas (and hence to [redacted])

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collect bonuses and avoid penalties) can result in end-of-the-month "storming" sessions, commonly referred to as *shturmovshchina*. [ ]

[ ] despite the "storming" periods (which can produce almost the entire monthly quota in the last half of a month), shipments to customers are frequently one to three days late. [ ] this ongoing feature of the production system is tacitly accepted by the military representative and the senior plant officials. Since the representatives must sign off on all items on schedule if the plant personnel are to receive their monthly bonuses, however, it is apparently quite common for military representatives to backdate invoices or to sign off on production before it is actually finished. This "working agreement" is a source of considerable power for the military representatives. [ ]

Military representatives also play a major role in the preparation of the voluminous operation and maintenance documentation that accompanies each finished item. The Soviets take these technical specifications very seriously, and the MRG, [ ] usually assigns its best officers to the task of monitoring their preparation. [ ]

**Marking and Shipping.** An important part of the oversight function of the MRG is the proper marking or stamping of accepted military products. The MRG must confirm that all requirements have been met by affixing a seal to both the production item and the accompanying documentation. The seal is sometimes a lock that is broken when it is opened. This process helps establish a permanent and well-defined audit trail. [ ]

Packing and crating instructions for the military, set forth in technical documentation, usually follow more rigid standards than those employed for civilian shipping. All loading and shipment is conducted in the presence of a military representative. From a Tushino plant that makes SAMs, the missiles are shipped to troop units or to storage facilities on specially designed railcars or truck-drawn trailers and accompanied by a military representative. [ ]

## Ancillary Functions

### Wartime Industrial Mobilization

Soviet mobilization plans involve the military-industrial complex as well as the armed forces. They call for all important industrial plants to maintain a reserve supply of essential resources so that the beginning of a war will not interrupt production.

[ ] the MRG is responsible for reviewing periodically the adequacy of the plant's mobilization planning and of its stockpiled materials and for ensuring the materials' regular rotation. [ ]

The importance that the Soviets attach to these stockpiles and the role of the military representative in the system are illustrated by an event that took place at the Riga Electric Machine Building Plant (REZ). In 1976, encountering an unavoidable shortage of raw materials, the plant director ordered that some be taken from the reserves, even though the reserves were considered inviolable without official authorization.<sup>11</sup> This action happened to coincide with an MRG inspection of the reserves. The senior military representative ordered the plant to rectify the violation within a few days, but it could not. To protect himself, the representative reported the discrepancy, and the plant was officially inspected by a delegation from the Baltic Military District Headquarters, including a deputy district commander. The plant director subsequently received a sharp reprimand from the district party committee (raykom).<sup>12</sup> From that time on, [ ] relations between the MRG and the management at REZ were noticeably strained. [ ]

Military representatives are a vital element in the Soviet industrial mobilization program. Without their oversight, the maintenance of reserves would be difficult and abuses more prevalent. The ability of Soviet

<sup>11</sup> Authorization is not always refused; in numerous cases a ministry has authorized a plant to tap state reserves in order to meet a military or foreign trade commitments. The reserves must be replaced as soon as possible, however. [ ]

<sup>12</sup> One of the raykom's responsibilities is oversight of the civil defense and mobilization activities of the plants in its district. [ ]

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defense industry to adapt to wartime conditions was demonstrated during World War II when, under military representative supervision, many facilities were evacuated eastward. They resumed defense production quickly—a measure of the effectiveness of the military representative system in wartime industrial mobilization. [ ]

#### Monitoring Production for Foreign Trade

[ ] production targeted for export undergoes the same quality control inspection as military items. If the amount at a given plant is insufficient to warrant the assignment of a special inspection unit from the Foreign Trade Ministry, that ministry will often contract with the Ministry of Defense to assign the task to its military representatives there. Because overseeing export production increases the volume of work an MRG performs, this can enable the MRG to enlarge its staff, which is a constant goal, since it can lead to a promotion for the senior military representative. [ ]

#### Effectiveness of Military Representatives

The defense sector has historically outperformed the civilian producers in the Soviet Union. One reason for this is the privileged role of the military in the economy's planning, allocation, and distribution. Another is the military representative system, which guarantees a standard of quality and enforces the fulfillment of contracts—enabling the military to circumvent the bottlenecks that plague production in the nonmilitary sector. In this way, these representatives bridge the gap between producer and consumer, creating a responsiveness in industry that is often lacking in the civilian sector. [ ]

The system does have deficiencies, however. The complaint most often heard among Soviet military representatives concerns the duplication of effort. Another problem is the conflicting requirement (1) to enforce undeviating adherence to all the technical specifications in Defense Ministry documentation and (2) to propose new and creative production methods that will be more cost effective and efficient. [ ]

The most controversial feature of the military representative system involves what is variously referred to as payoffs, bribes, or necessary public relations. The plant employees' bonuses and overtime pay depend on MRG acceptance of military production and could be threatened by any delays caused by overzealous MRG inspection. Plant management often makes available to military officers such scarce commodities as apartments and automobiles, as well as more discrete benefits, including dinners, liquor, vacation reservations, and the like. In return, military representatives have been known to overlook unmet schedules, to backdate invoices, and occasionally to sign off on production prior to delivery. [ ]

Against the background of endemic bribery and black-market operations in Soviet society, evidence of influence peddling in the military representative system is not remarkable. We do not infer that the MRG's leverage causes it to neglect its basic quality control functions. On the contrary, it has often been reported that because their careers depend upon the quality of the equipment provided to the services, military representatives are stringent in monitoring the fulfillment of the quality requirements. [ ]

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## Appendix A

### Organization for Weapons Acquisition in the USSR

The Ministry of Defense plays a central and unique role in the Soviet economy. The role is unique because of defense spending's large share of the Soviet economy and the way in which mobilization planning extends the Ministry's interests into every corner of industrial production. In performing its duties, the military representative system forms a vast apparatus that penetrates all defense-related economic activities of the Soviet state and enables the Ministry to exercise its day-to-day influence in the Soviet economy. To understand the workings of the military representative system in the weapons acquisition process, it is first necessary to understand the structure of that system, from its center within the Defense Ministry to its interaction with organizations and facilities of Soviet defense industry.

#### Deputy Minister of Defense for Armaments

The deputy minister of defense for armaments is responsible for ensuring that the armed forces have the most modern, technologically advanced weapon systems that Soviet defense industries can produce. He coordinates the activities of the Ministry's main and central armaments directorates and promotes standardization of arms and equipment. In addition, he monitors research performed by the civilian scientific community for possible military applications.

#### The Branches of Service

Procurement of military equipment is coordinated with each branch of service through its deputy commander in chief responsible for armaments.<sup>13</sup> These

<sup>13</sup> Holders of this position as of early 1984 are Lt. Gen. Nikolay Smirnitskiy (Strategic Rocket Forces), Col. Gen. Engineer Leonid M. Leonov (Air Defense Forces), Adm. Pavel Kotov (Navy), and Lt. Gen. Nikolay Shishkov (Air Forces), and Col. Gen. Pavel I. Bazhenov (Ground Forces).

deputies monitor the progress of research and production activity for their services and advise the commanders in chief on technical matters.

#### Main and Central Directorates

The central apparatus of the Defense Ministry has at least 10 main armaments directorates responsible for the development and procurement of all generic categories of arms and equipment.

These main and central directorates are the focal point for all procurement operations throughout the production cycle. They are the "customer agents" who order the start of a development or a production program. Their responsibilities include the supervision of military representatives and the ongoing detailed coordination with the civilian ministries that produce military weapons and equipment. In addition, the main and central directorates are the point of contact between military and civilian research institutes contributing to the formulation of military technical requirements.

#### Scientific Research Institutes of the Ministry of Defense

The main armaments directorates are responsible for the technical oversight of all Soviet military R&D activities. Each of these directorates has several military NIIs (known as NIIMOs—*nauchno-issledovatel'nye instituty ministerstva oborony*), which are subordinate to its deputy chief for R&D. The NIIMOs decide on the feasibility of and requirements for the

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[redacted] the Central Scientific Research Institute 22 of the Ministry of Defense (TsNIIMO-22), located in Mytishchi near Moscow, as the center through which the bureau received technical direction on military R&D projects. The responsibilities of TsNIIMO-22 include:

- Provision of technical specifications for a project, or approval of the specifications provided by the VKB.
- Approval for the production of the initial prototype (after the senior military representative has signed off on it).
- Arbitration of disputes between VKB personnel and military customers.
- Publication of a secret document entitled "List of Components Approved for Installation on Military Apparatus." This document lists plugs, tubes, generators, relays, electric motors, resistors, transistors, etc., that can be used in military hardware.
- Heading interdepartmental commissions organized to discuss VKB projects before final military acceptance and the beginning of series production. [redacted]

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#### Academy of Sciences and the Military

The Ministry of Defense monitors research performed by the Academy of Sciences through a special studies group known as the Section on Applied Problems. This group is attached to the Presidium of the Academy and coordinates all plans for defense-related research and development projects undertaken at Academy facilities. [redacted]

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development and production of weapons. They also serve as repositories for lists of components approved for military production, and for operating and maintenance manuals for all equipment procured by the parent main directorate. [redacted]

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The Section on Applied Problems screens and evaluates military research proposals. 

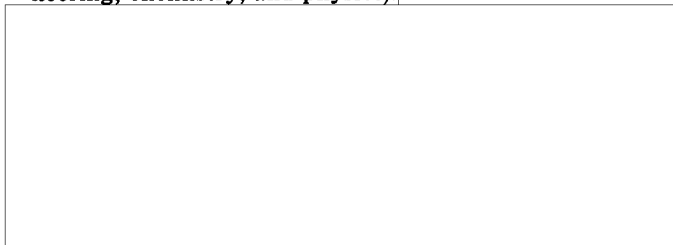
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 the section consists of 20 to 30 officers who are technically well qualified (many of them hold advanced degrees in such fields as engineering, chemistry, and physics). 

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